EX-6014WI

RS232 to WiFi Wireless Adapter, w/ Mounting Kit

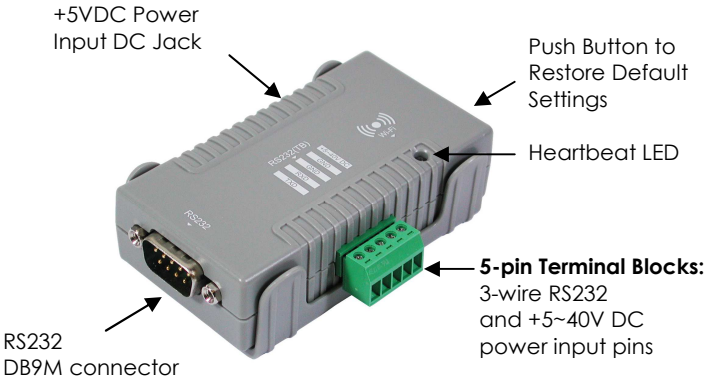
1. Introduction

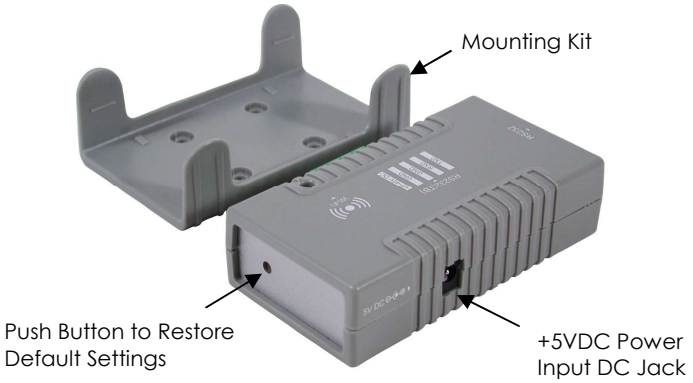
Thank you for purchasing this RS232 to WiFi Wireless Adapter (hereinafter referred to as **"WiFi-Adapter"**), it is designed to communicate with RS232 serial devices over 802.11b/g compatible WiFi wireless connections. For the application where LAN cable is not preferred, the WiFi-Adapter delivers a simple, reliable and cost-effective network connectivity to enable your success.

Features:

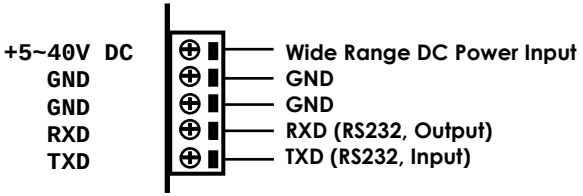
- ✓ One DB9 male RS232 connector to WiFi wireless network
- ✓ Supports 3-wire RS232 signals over the 5-pin terminal block connector
- ✓ Fully 2.4GHz, IEEE 802.11b/g compatible WiFi connectivity
- ✓ Protocols: ARP, IP, ICMP, UDP, TCP, DHCP, HTTP
- ✓ RS232 baud rate from 1200bps to 115.2Kbps
- ✓ Signals: TXD, RXD, RTS, CTS, DTR, DSR, DCD, RI
- ✓ Modes: TCP Server, TCP Client
- ✓ Supports Virtual COM Port drivers for Windows platforms
- ✓ Power Requirement: +5V~40VDC over the TB5 or +5VDC from the standard DC Jack

2. Connector Layout





- **5-pin Terminal Blocks:** This pluggable terminal blocks integrates 2 wide-range DC power input pins and 3 RS232 signal pins. You can choose to power the **WiFi-Adapter** by either applying +5V on the DC Jack OR +5V~40V on the Terminal Blocks (but not both simultaneously).



- **Push Button to Restore Default Settings:** This switch can be used to reset the **WiFi-Adapter** to its factory default settings. Press and hold the button by a pen or similar tool for several seconds will restore the default settings immediately.
- **DC Jack Power Connector:** A 5V/2A AC adapter is supplied with this product. Please connect its power cable to this DC Jack connector.
- **LED Indicator:** The white color LED is a Heartbeat indicator, it is blinking when the **WiFi-Adapter** is powered up and function properly.

3. Installing WiFi-Adapter

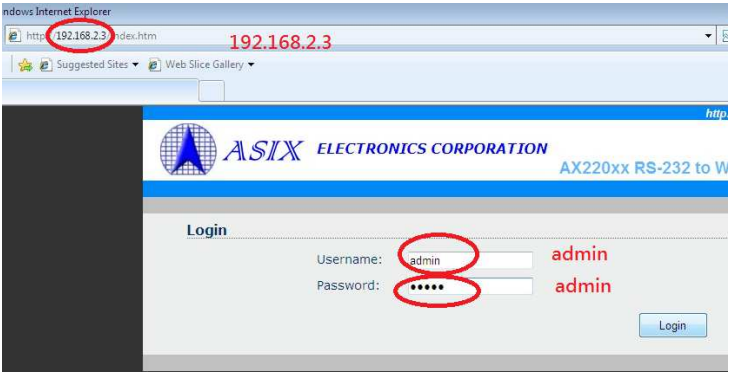
1. **Configure Web Access**
   You can access the WiFi-Adapter by using either an access point with the SSID - Connect (with all encryption disabled, such as WEP & WPA) or a wireless card with Ad-Hoc mode (with SSID - Connect).

2. **Installing the WiFi-Adapter Hardware**
   - Connect your PC to the wireless network.
   - Connect the power to the DC jack OR the terminal blocks of the **WiFi-Adapter.**
   - Connect your serial device to DB9 connector OR the 5-pin terminal blocks.

3. **Power up the WiFi Adapter**
   - When the WiFi-Adapter is powered up, the Heartbeat LED will be blinking and connect to the SSID Connect. If it cannot find a SSID of connect it will connect to the first unsecured network it found.
   - **Find the wireless network icon** on your computer (on Windows, you'll find an icon that looks like 2 computers or a set of bars in your taskbar on the bottom right of your screen; Macs will have a wireless symbol in the top right).
   - **View available WiFi networks** by either right-clicking the icon and selecting "View Available Wireless Networks" (Windows XP) or clicking the icon and selecting to "Connect or disconnect..." (Windows Vista). On Mac OS X and Windows 7, all you have to do is click on the WiFi icon to see the list of available networks.

- **Choose the R2WiFi to connect to** by clicking the "Connect" button (or just selecting it on Win7/Mac).

- **Enter the security key** -- if the wireless network is encrypted (with WEP or WPA), you'll be prompted to enter the network password or passphrase. This will be stored for you for next time, so you'll only have to enter it once.
- **Start browsing the WiFi-Adapter!** You should now be connected to the **WiFi-Adapter**; open your browser and visit the **WiFi Adapter** at **192.168.2.3** default IP address. Login using **admin** for both Username and Password.

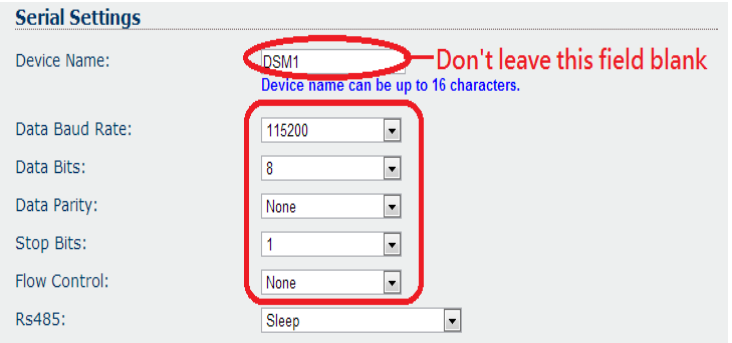


4. Configuring the WiFi-Adapter

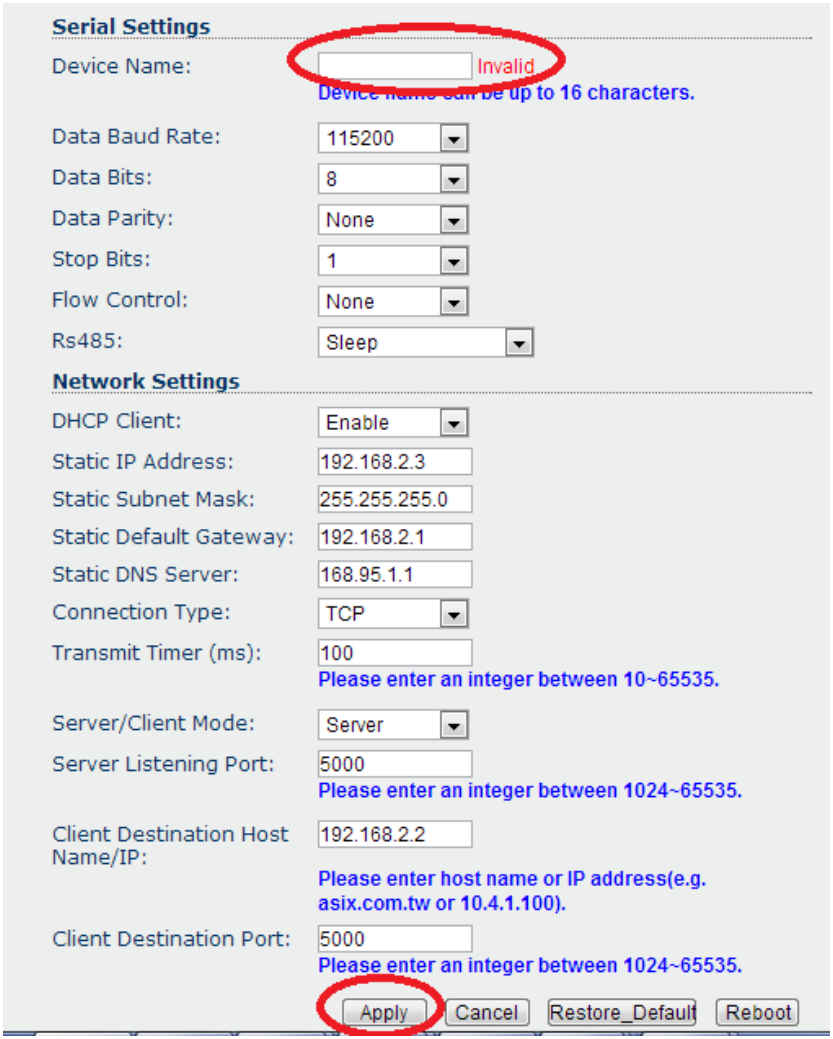
In the Configuration menu, there are **Basic**, **Advanced**, **Security**, **WiFi**, **WiFi Wizard** and **Status** pages for the settings to work on this WiFi-Adapter. The most frequently used pages are **Basic**, **Security**, **WiFi** and **WiFi Wizard** pages.

A. Basic setting page:

- **Serial Settings:** Please don't leave Device Name blank, otherwise it will be rejected when you are saving the new settings by pressing "Apply" button afterward.

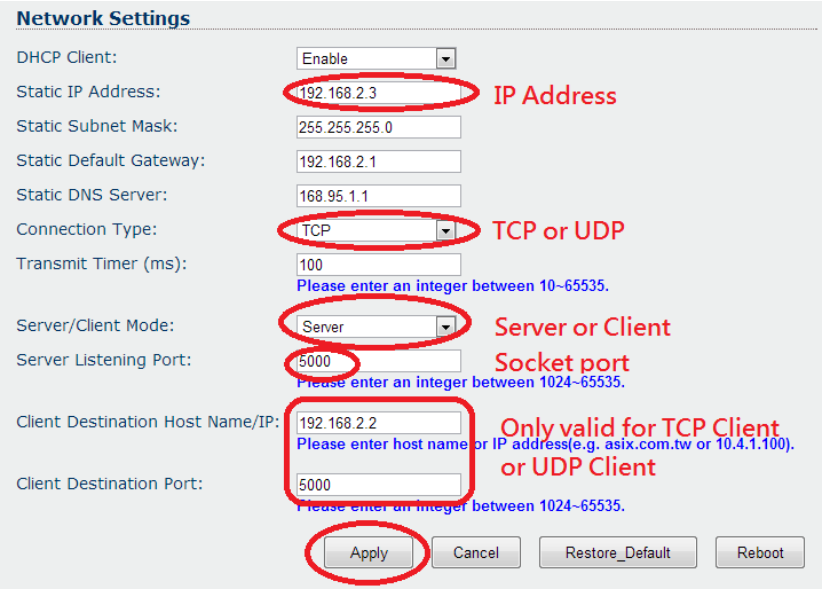


Note: When you restoring the factory default settings by pressing the hardware push button at the rear panel of the **WiFi-Adapter**, the "Device Name" field will be cleared to Blank, please key in your Device Name, or you would not be able to save your settings.



- **Network Settings:**

The Network Settings provides settings of the **WiFi-Adapter** including its IP/Socket, modes (TCP/Server, TCP/Client, UDP/Server or UDP/Client).

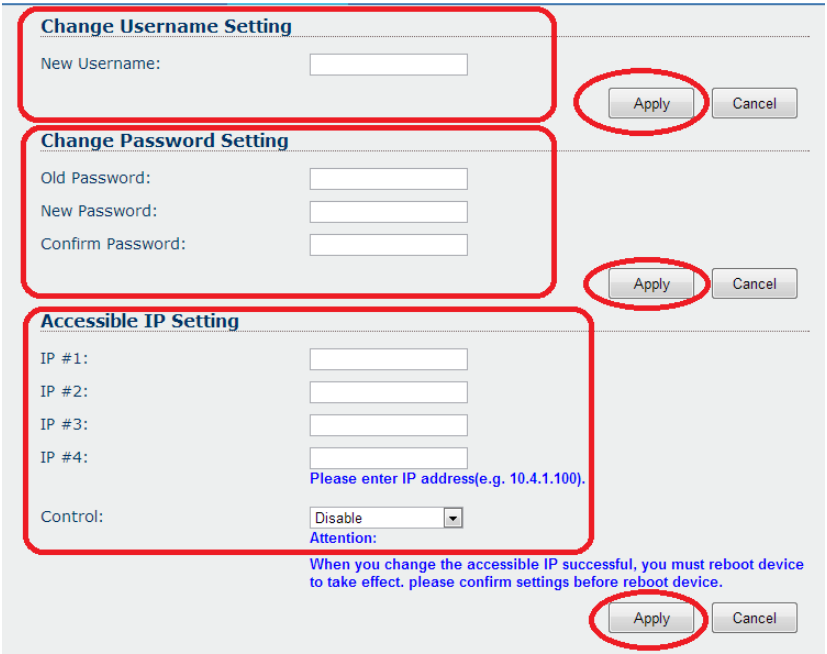


B. Security Settings

This page is to set login username, password and client IP control. Each field has its individual "Apply" button so you have to click it accordingly to save the corresponding settings.

The factory default username is "**admin**" and its password is "**admin**", too.

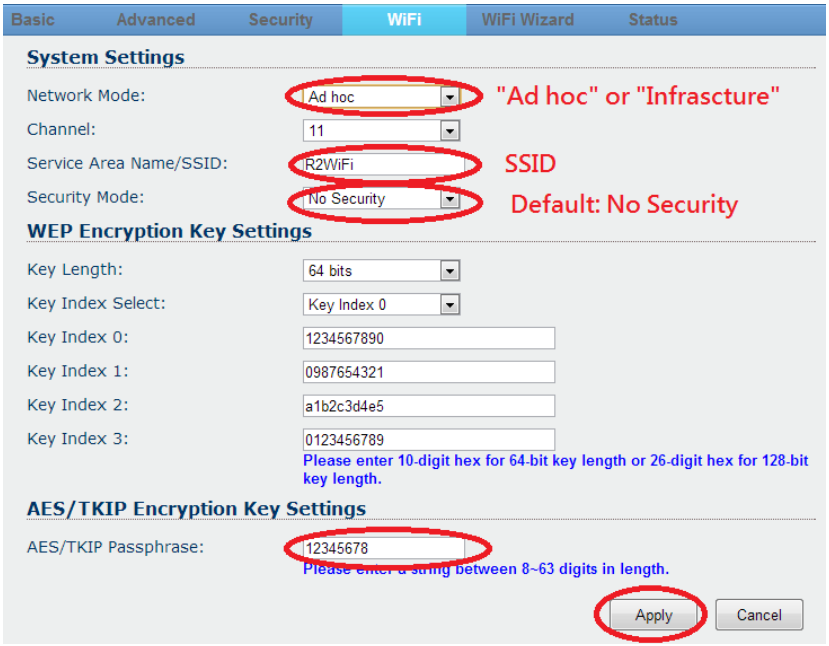
The Accessible IP Settings is to allow the service only for the specific clients on list, there are 4 clients in maximum. To enable this function, please change the Control option from **Disable** to **Enable** as well.



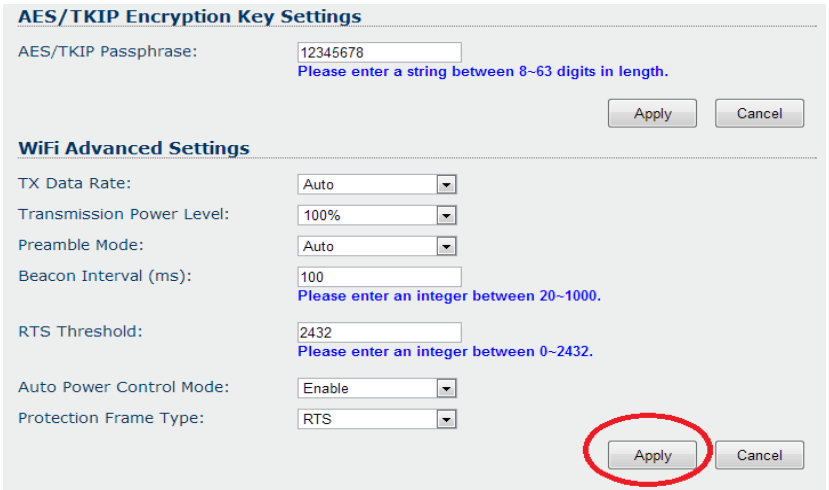
C. WiFi Settings

This page is to set WiFi System Settings, WEP Encryption Key Settings, AES/TKIP Encryption Key Settings. There are some fields for the **WiFi Advanced settings** at the bottom of the page, please click "Apply" buttons next to the settings once you want to update the corresponding settings.

WiFi General Settings



WiFi Advanced Settings



5. Configuring the WiFi-Adapter to Access Point

If you are using this **WiFi-Adapter** with an access point, we recommend you use the **WiFi Wizard** to guide you configure the WiFi settings. Click **WiFi Wizard** button, choose **Infrastructure** Network Mode, follow the Wizard's instructions to complete the installation.

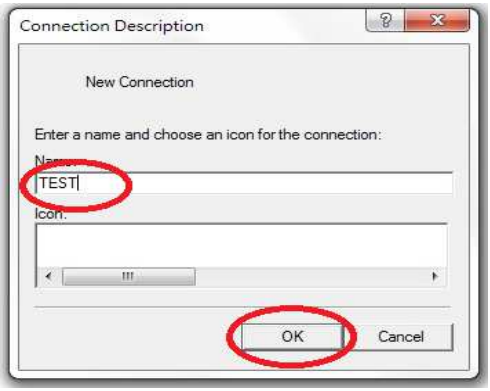
Basic
Advanced
Security
WiFi
WiFi Wizard
Status
Welcome to the WiFi Setup Wizard
This wizard helps you set up your device to join a WiFi access point or set up its own security-enabled WiFi network.
Network Mode:
Infrastructure
Channel:
11
Service Area Name/SSID:
R2WiFi
The service area name can be up to 31 characters.
Security Mode:
No Security
AES/TKIP is unsupported in ad-hoc mode.
To prevent outsiders from accessing your network, we recommend you assign a security mode to your network.
Next
Finish

4. Examples for Using the WiFi Serial Port

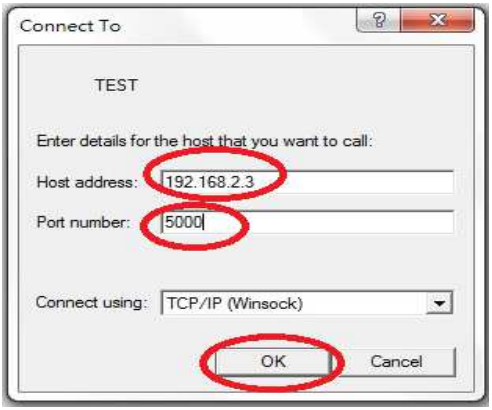
This section introduces an example to communicate with the serial port of this **WiFi-Adapter**. We are using a Terminal Emulation Program (such as HyperTerm or TeraTerm) to send data over the TCP/IP socket port and receive the loopback data from the same socket port.

Similar to the HyperTerm example, the application software can read or write data on the TCP/IP socket port through Windows API.

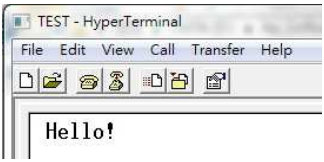
1. Launch the HyperTerm utility, it will create a new connection, please type the connection name (type "TEST" in this case).



2. Enter the **WiFi-Adapter**'s IP address and port number:



3. Once the connection is built up successfully, the HyperTerm is ready to send or receive data, add a loopback connector on the DB9 connector or short the TXD and RXD pins on the 5-pin Terminal Blocks. Type "Hello!", if the screen shows the same characters typed, then serial port is working well!



5. Using Virtual COM Port Drivers

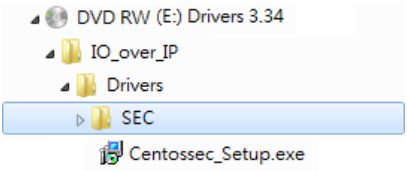
This **WiFi-Adapter** can work in ether Straight IP mode or Virtual COM Port mode. The Straight IP mode will be accessed through its TCP/IP socket port directly. The Virtual COM Port mode emulates a COM port by installing the CentosSEC Virtual COM Port driver.

The **Virtual COM Port** software, CentosSEC, is an advanced software to map your serial port devices (COM ports) to Ethernet so they could be accessed from anywhere in the world (via Internet or LAN) as if it is attached directly to the remote PC. When the attached serial port device sends communication data it is actually transmitted over TCP/IP network and back from the network to your device.

After installed, the driver allows Windows platform software, using standard API calls, to be used in an Ethernet application.

Installing CentosSEC

1. Run the Centos_Setup.exe (right click "Centossec_Setup.exe" and choose "Run as an Administrator") on the supplied CD, it was shipped in the following folder:



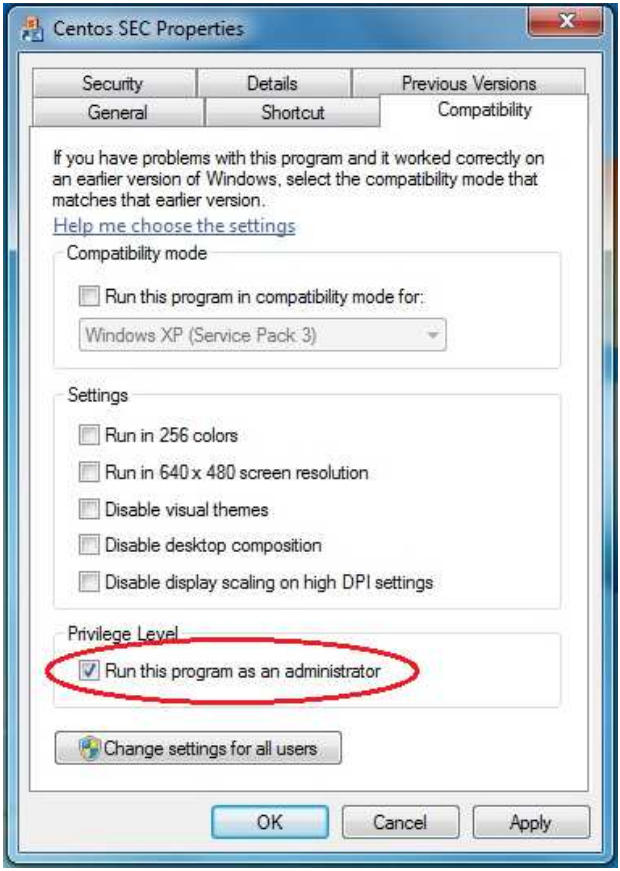
2. While installing the driver, please enter the password **centos1104**:

Serial to Ethernet Connection Utility 1.01 Installation
Enter the password
This setup is password protected.
A password is required to begin the installation of SEC. Type the password and then click "Next".
If you do not know the password then click "Cancel" to cancel the installation.
Installation password
centos1104
centos1104
Copyright 2011, Centos Inc.
< Back
Next >
Cancel

3. Follow the on-screen instructions to complete the Installation, you are ready to launch the software utility.

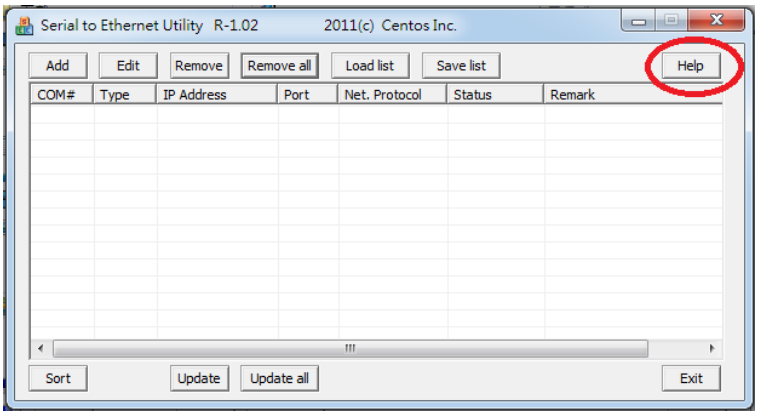
Launch CentosSEC

After installed the CentosSEC, you will need to navigate either to the **Start Menu** and locate the launcher in Programs submenu or double-click the shortcut created on the desktop. ***Please note that CentosSEC should be run as an administrator***, for some Windows such as 2008, Vista and 7, their UAC (User Account Control) will limit the CentosSEC from working properly if you have only standard user privileges. In this case, please right-click the CentosSEC shortcut on the desktop, choose "**Properties**", click "**Compatibility**" tab, enable the "**Run this program as an administrator**" option of the privilege level then click **OK**. Please see the following screen shot:

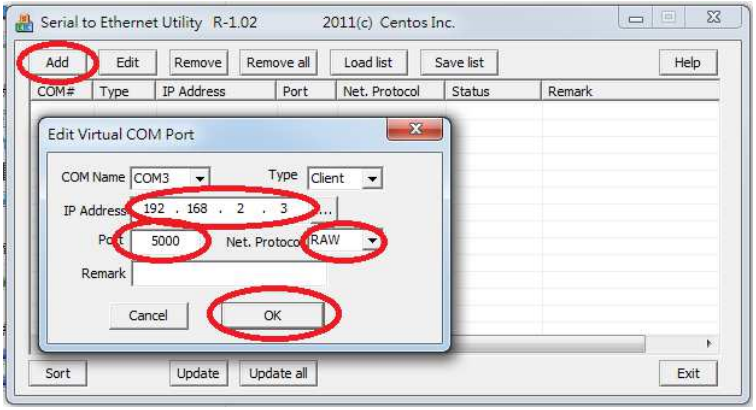

Centos SEC Properties
Security
Details
Previous Versions
General
Shortcut
Compatibility
If you have problems with this program and it worked correctly on an earlier version of Windows, select the compatibility mode that matches that earlier version.
Help me choose the settings
Compatibility mode
Run this program in compatibility mode for:
Windows XP (Service Pack 3)
Settings
Run in 256 colors
Run in 640 x 480 screen resolution
Disable visual themes
Disable desktop composition
Disable display scaling on high DPI settings
Privilege Level
Run this program as an administrator
Change settings for all users
OK
Cancel
Apply

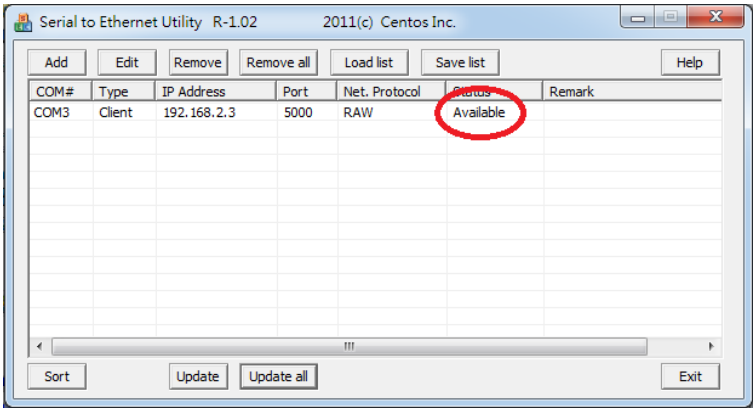
Configuring CentosSEC

1. Running the CentoSEC, the following screen will appear, click the **Help** button will list the supported operations and details. You may need to click **Add** to create a new COM port then click **Update All** to save the settings. You don't need to reboot the system after you pressing **Update All** button for any setting update.

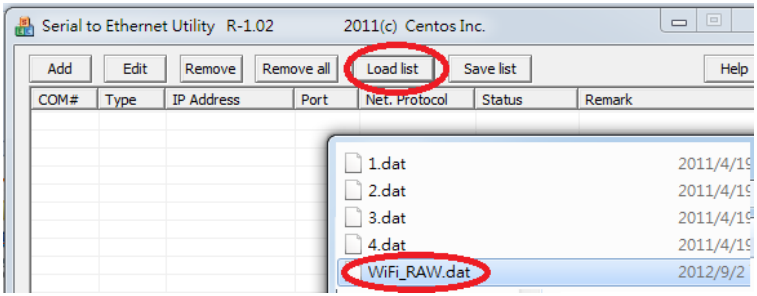


2. To add a new COM port, it is important to set the Net. Protocol to **RAW** instead of T**ELNET** for this **WiFi-Adapter**. After clicked **Update All** button, the status field should become "**Available**". If it is "**Registered**", it is not working properly. You need to review the problem. Usually it because you did not run as an Administrator.





3. You may use "**Load list**" button to get the preset configuration file (**WiFi_RAW.dat**) for the quick installation.



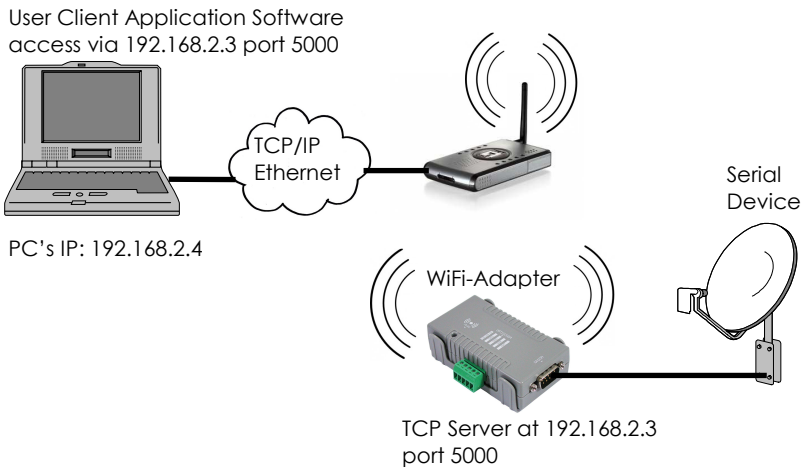
6. Operation Modes

The **WiFi-Adapter** can function as a server or Client for TCP and UDP connections. The application scenarios include TCP Server mode, TCP Client mode, UDP mode and TCP Server/Client Paired mode (using 2 **WiFi-Adapters** with one in TCP Server mode and the other one in TCP Client mode). When in TCP Server/Client Paired mode, the 2 **WiFi-Adapters** are remotely connected without any need for extra software or drivers.

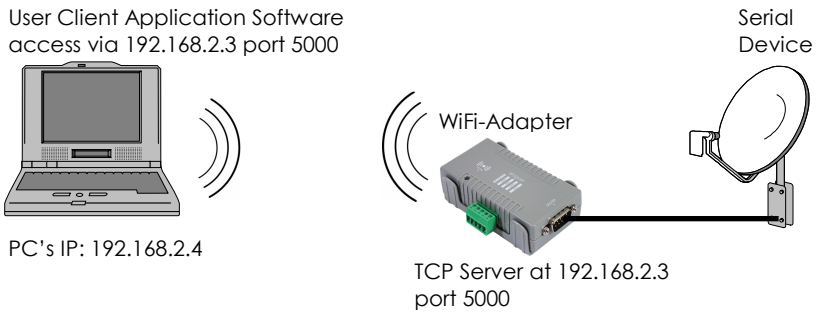
1. TCP Server mode:

TCP Server mode provides the service at the TCP/IP socket port (factory default is set at 192.168.2.3 port 5000). The application software works as a client to this **WiFi-Adapter**. It can communicate via straight IP address directly or via a Virtual COM Port driver.

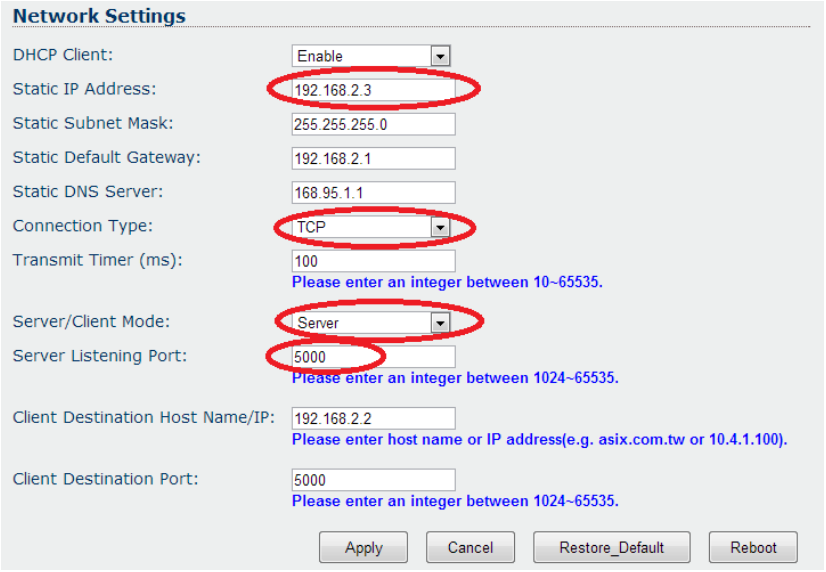
TCP Server with Infrastructure Mode



TCP Server with Ad-Hoc Mode



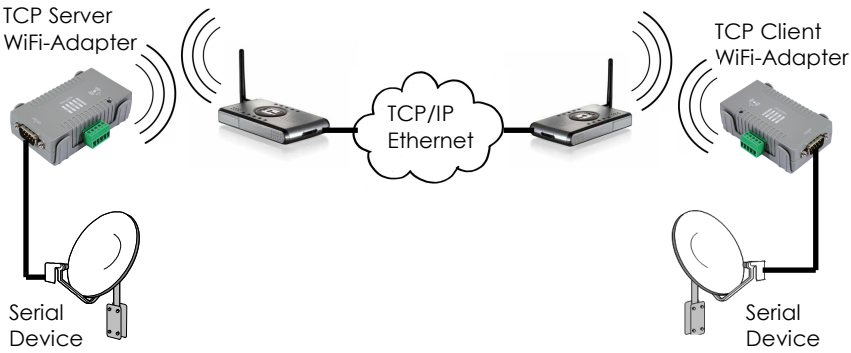
The required settings for TCP Server as follows:



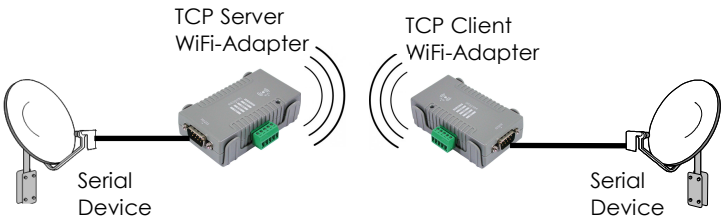
2. TCP Server/Client Paired mode:

The TCP Server/Client Paired mode is designed for 2 **WiFi-Adapters** to be connected in back-to-back via WiFi wireless network. The TCP Server unit provides a service at 192.168.2.3 port 5000, the TCP Client unit should set its Destination IP to match the Server's service port (192.168.2.3 port 5000). In this mode, the serial ports of the Server and Client are remotely connected without any software support. It's very simple and straightforward.

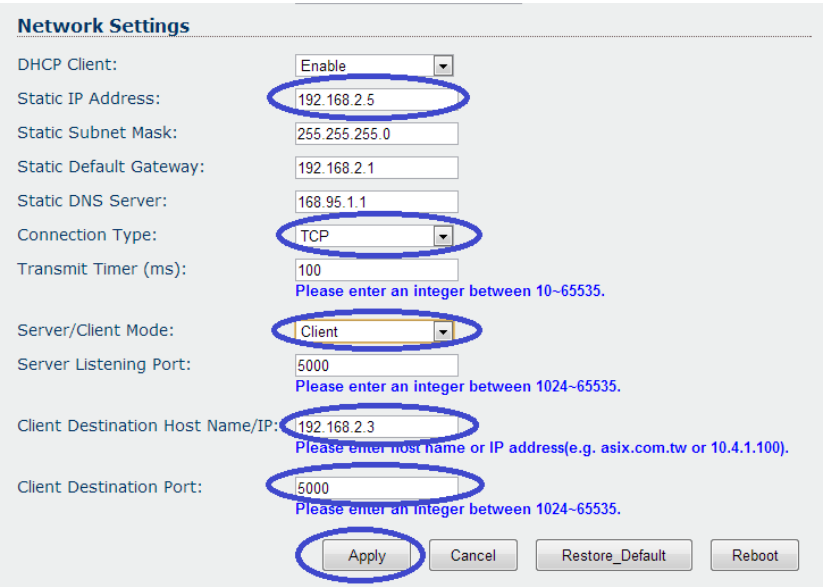
TCP Server/Client Paired with Infrastructure Mode



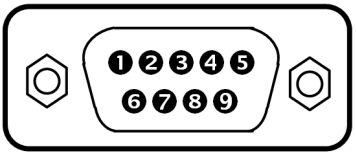
TCP Server/Client Paired with Ad-Hoc Mode



The TCP required Server settings were mentioned above, the TCP Client settings as follows, please note that its Destination Host IP and Port need point to the TCP Server (192.168.2.3 port 5000 in this example).

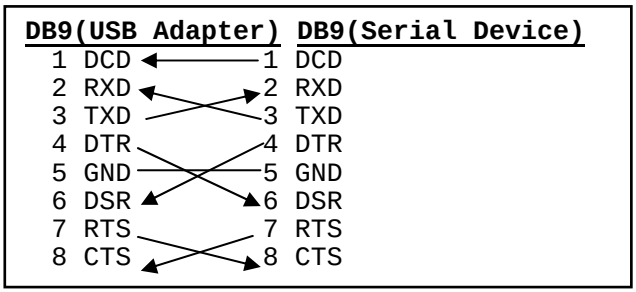


7. RS232 Male-DB9 Pin Assignment and Wiring



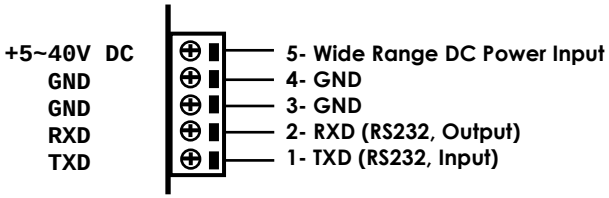
9 Pins	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

DB9(Male) RS232 to DB9(Male) RS232 Wiring

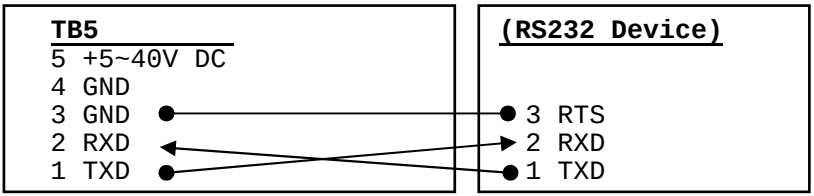


8. TB5 Pin Assignment and Wiring

5-pin Terminal Blocks (TB5) Pin Assignment:



TB5 RS232 Cable Wiring:



9. Product Specifications

Type	Specifications
Ethernet	IEEE 802.11b/g Wireless Compatible
Data Rate	IEEE 802.11b: 1, 2, 5.5 and 11Mbps
	IEE 802.11g: 6, 9, 12, 18, 24, 36, 48 and 54Mbps
	Supports TX rate auto fall-back mechanism
Radio	
Frequency	2.412 ~ 2.472 GHz
Channels	Up to 13 channels. Profiles available include USA, Canada, Europe, Spain, France, Japan, China, Taiwan and "Other" (multiple countries)
Modulations	802.11b: DSSS with DBPSK, DQPSK and CCK
	802.11g: DSSS with DBPSK, DQPSK and CCK
	OFDM with BPSK, QPSK, 16QAM and 64QAM
Antenna	Integrated PCB Antenna
RF Output Power	802.11b: 16.5 ±1dBm
	802.11g: 14 ± 1dBm @ 54 Mbps;
	15 ± 1dBm @ 48 Mbps;
	16 ± 1dBm @ 6 ~ 36 Mbps
Receive Sensitivity	802.11b: 16.5 ±1dBm 802.11g: 14 ± 1dBm @ 54 Mbps; 15 ± 1dBm @ 48 Mbps; 16 ± 1dBm @ 6 ~ 36 Mbps
	802.11b: -92dBm @ 1 Mbps; -90dBm @ 2 Mbps; -89dBm @ 5.5 Mbps; -85dBm @ 11 Mbps
	802.11g: -82dBm @ 6 Mbps; -82dBm @ 9 Mbps; -82dBm @ 12 Mbps; -82dBm @ 18 Mbps; -79dBm @ 24 Mbps; -76dBm @ 36

	Mbps; -71dBm @ 48 Mbps; -70dBm @ 54 Mbps
RS232 Serial Port	
Connectors	9-pin D-type male (DB9M, full signal) and 5-pin terminal blocks (TB5, 3-wire signal).
RS232 Signals	DB9M: TXD, RXD, RTS, CTS, DTR, DSR, DCD, DSR, RI, GND TB5: TXD, RXD, GND
Baud Rate:	1200bps to 115.2Kbps
Data bits	5, 6, 7, 8
Parity:	None, Even, Odd
Stop bits	1, 1.5, 2
Flow Control	Hardware RTS/CTS, Software XON/XOFF
Setup Options	Web Configuration
Configuration Modes	Straight IP (TCP or UDP Sockets) Virtual COM Port TCP Server/Client Paired
Configuration Method	Any web browser via built-in web server
Security	802.11i security: WEP-64/128, TKIP (WPA-PSK) and AES (WPA2-PSK)
Accessories	Wall mount kit and Optional DIN RAIL Clips
Power Requirements	
Power Input	5V DC (via DC Jack) 5V~40V DC (via TB-5)

Power Consumption	250mA @ 5V DC
Mechanical Specifications	
Material	Plastic
Dimensions	3.24"(L)x1.74"(W)x0.87"(H) (8.23 x 4.42 x 2.22 cm)
Gross Weight	9065g (0.20lb)
Environmental	
Operating Temperature	0 to 558C (32 to 1318F)
Storage Temperature	-20 to 858C (-4 to 1858F)
Operating Humidity	5 to 95% RH